

## CLAIMS

What is claimed is:

1. A drive system with an electric motor, comprising:  
an integrated armature short-circuit brake having a first inherent delay time,  
a mechanical brake having a second inherent delay time which is longer  
than the first inherent delay time, and  
a controller applying a control signal to the integrated armature short-circuit  
brake and the mechanical brake at an activation time for immediately  
stopping the electric motor in the absence of a controllable slow-down of the  
electric motor,  
wherein the armature short-circuit brake is disengaged when a thermal load  
limit for the electric motor or the controller has been reached.
2. The drive system of claim 1, wherein the thermal load limit is defined by at  
least one parameter selected from the group consisting of a maximum  
current, a product of a current and a reaction time, a reaction time and a  
system temperature.
3. The drive system of claim 2, wherein the at least one parameter is stored in  
a memory of the controller.

4. The drive system of claim 1, wherein the armature short-circuit brake remains engaged if a danger for personnel or the environment is detected.
5. A method for instantaneously stopping a drive system with an electric motor in the absence of a controllable slowdown of the electric motor, said drive system including an integrated armature short-circuit brake having a first inherent delay time and a mechanical brake having a second inherent delay time which is longer than the first inherent delay time, the method comprising the steps of:

applying at an activation time a control signal to the integrated armature short-circuit brake and the mechanical brake, and

disengaging the armature short-circuit brake when a thermal load limit for the electric motor or its control electronics is reached.
6. The method of claim 5, wherein the thermal load limit is defined by at least one parameter selected from the group consisting of a maximum current, a product of a current and a reaction time, a reaction time and a system temperature.
7. The method of claim 6, and further comprising the step of storing the at least one parameter in a memory.

8. The method of claim 5, wherein said disengaging step is postponed if a danger for personnel or the environment is detected.